|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Unit 2: Cells & Cell Processes** | | | | | | |
| Name: | Start Date: | | | 10/31/16 |  |  |
|  | Test 3 Date: | | | 11/21/16 |  |  |
| Period: | Teacher: Ms. Jost | | | |  |  |
|  |  |  |  |  |  |  |
| **Cells** | Submitted | Resubmit | Correct | Evidence of Learning | Date | Sign-Off |
| **Objective 6:** Compare prokaryotic and eukaryotic cells in terms of their general structures (plasma membrane and genetic material) and degree of complexity. |  |  |  | Catalyst: Characteristics of Life |  |  |
|  |  |  | Notes: Intro to Cells |  |
|  |  |  | HW: Prokaryote v Eukaryote Review |  |
|  |  |  | Catalyst: Latin Roots |  |
|  |  |  | Lab: Pro vs. Eu Cut-Out |  |
|  |  |  | HW: Venn Diagram (Pro vs. Eu) |  |
| **Objective 7:** Summarize the structure and function of organelles in eukaryotic cells (including the nucleus, plasma membrane, cell wall, mitochondria, vacuoles, chloroplasts, and ribosomes) and ways that these organelles interact with each other to perform the functions of the cell. |  |  |  | Catalyst: TBD |  |  |
|  |  |  | Notes: Cell Structure & Function |  |
|  |  |  | HW: CHEGGER Review |  |
|  |  |  | Worksheet: Cell Structure Coloring |  |
|  |  |  | Worksheet: History of Cell Theory |  |

**Unit 2: Cells & Cell Processes**

Start Date: 10/31/2016 Test 3 Date: 11/21/2016

**Objective 6:** Compare prokaryotic and eukaryotic cells in terms of their general structures (plasma membrane and genetic material) and degree of complexity.

*Essential Question:* How do prokaryotes and eukaryotes differ?

*“I Can” Statements:*

* Compare and contrast prokaryotes and eukaryotes

**Objective 7:** Summarize the structure and function of organelles in eukaryotic cells (including the nucleus, plasma membrane, cell wall, mitochondria, vacuoles, chloroplasts, and ribosomes) and ways that these organelles interact with each other to perform the function of the cell.

*Essential Question:* What are the main organelles (nucleus, plasma membrane, cell wall, mitochondria, vacuoles, chloroplasts, and ribosomes) and their functions?

*“I Can” Statements:*

* Identify the structure and function of organelles
* Explain the interactions of organelles (e.g. nucleolus 🡪 ribosome 🡪 ER 🡪 Golgi)
* Use a compound light microscope

**Objective 8:**  Explain how homeostasis is maintained in a cell and within an organism in various environments (including temperature and pH).

*Essential Question:* How do cells maintain homeostasis?

*Essential Question:* How do organisms maintain homeostasis?

*“I Can” Statements:*

* Model the way a plasma membrane functions to control the way particles move in/out of a cell
* Predict the movement of water and/or solutes across the cell membrane, given a set of conditions
* Explain how energy is used to maintain homeostasis

**Important Vocabulary:**

**CATALYST 1:** What is a living thing? What are the requirements for life?

**CATALYST 2:** Use your Latin packet to define the following terms.

* Pro/karyote-
* Eu/karyote-
* Nucleus-

**CATALYST 3**: TBD

Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Period: \_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

**CHEGGER: Identify the 8 characteristics that all living things share:**

Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Notes: Intro to Cells Period: \_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

**Intro to Cells**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_are the basic units of all living things.
* All living things are made of cells; however, cells could not be seen until the invention of the\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1600s) invented the light microscope.

**Microscope Types**

* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Microscopes
  + Enlarges an image with more than one lens
  + What we use
* \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Microscopes
  + Much more powerful

**Cells**

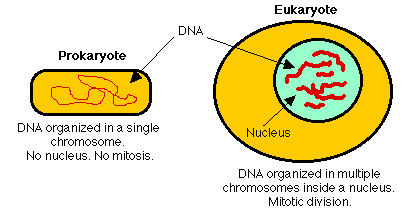
* Cells are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
* All cells contain the following:
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Membrane that defines the cell as a distinct entity
    - Regulates what goes into and out of the cell
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - DNA-containing region of the cell
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Semifluid matrix found between the plasma membrane and the nucleus
    - Holds the organelles
  + \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
    - Responsible for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_DNA into proteins

**Modern Cell Theory**

* Modern cell theory has 3 parts:

**Cell Types**

* Prokaryotes
  + The name means “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”
  + No \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_or other structure surrounded by a membrane
  + Smaller
  + More “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”
  + Probably precursors to chloroplasts and mitochondria
  + Examples: archaea & eubacteria
* Eukaryotes
  + The name means “\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_”
  + Have a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and other structures surrounded by membranes
  + Examples: animals, plants, fungi, protists (Eukarya)



|  |  |
| --- | --- |
| http://upload.wikimedia.org/wikipedia/commons/thumb/9/99/Prokaryote_cell_diagram.svg/800px-Prokaryote_cell_diagram.svg.png | http://img.sparknotes.com/content/testprep/bookimgs/sat2/biology/0002/eukaryote.gif |
|  | http://allyncali16.tripod.com/sitebuildercontent/sitebuilderpictures/prokaryote.gif |
| http://fig.cox.miami.edu/Faculty/Dana/eukaryote.jpg | http://faculty.uca.edu/~johnc/eukaryote.jpg |
| http://www.physicalgeography.net/fundamentals/images/prokaryote.jpg | http://library.thinkquest.org/12413/img/p-moneran.jpg |

Biology I Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Lab: Prokaryote vs. Eukaryote cut-out Period: \_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

**1.1.2:** Compare prokaryotic and eukaryotic cells in terms of their general structures (plasma membrane and genetic material) and degree of complexity.

Fill-in the chart below. You need at least 3 points AND 2 examples in the “Eukaryotes” column, at least 3 points AND 1 example in the “Prokaryotes” column, and at least 2 points in the “All Cells” column.

**Eukaryotes**

* Example:
* Example:

**Prokaryotes**

* Example:

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**All Cells**

* 
* 

Cut out the pictures from the first page of this packet. Glue or tape them in to the appropriate column. Check your answers with your teacher when you are done.

**Eukaryotes**

**Prokaryotes**

Biology \_\_\_\_\_ Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Venn Diagram: Cell Structure **55 pts** Period: \_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

1. Referencing your notes and the images from your cut-out lab, use the Venn diagram below to compare prokaryotic and eukaryotic cells. Place the following structures in the appropriate places:

* Larger
* Cytoplasm
* Smaller
* DNA
* Bacteria
* Flagella
* “before nucleus:
* “true nucleus”
* Mitochondria
* Animal cell
* Nucleoid
* Living
* Nucleus
* Plasma membrane
* Ribosomes
* Plant cell

**Prokaryotic Eukaryotic**

# Biology I (H) Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Notes: Cell Structures & Function Period: \_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Organelle** | **Function/Job** | **Structure**  (What is it made of, how is it arranged, what does it look like, drawing?) | **Found in prokaryotes, eukaryotes, or both?** | **Found in animal cells, plant cells, or both?** |
| \*Nucleus\* |  |  |  |  |
| Nuclear Envelope |  |  |  |  |
| Nucleolus |  |  |  |  |
| \*Ribosomes\* |  |  |  |  |
| **Organelle** | **Function/Job** | **Structure**  (What is it made of, how is it arranged, what does it look like, drawing?) | **Found in prokaryotes, eukaryotes, or both?** | **Found in animal cells, plant cells, or both?** |
| Rough Endoplasmic Reticulum |  |  |  |  |
| Smooth Endoplasmic Reticulum |  |  |  |  |
| Golgi Apparatus |  |  |  |  |
| Lysosomes |  |  |  |  |
| \*Vacuole\* |  |  |  |  |
| **Organelle** | **Function/Job** | **Structure**  (What is it made of, how is it arranged, what does it look like, drawing?) | **Found in prokaryotes, eukaryotes, or both?** | **Found in animal cells, plant cells, or both?** |
| \*Mitochondria\* |  |  |  |  |
| \*Chloroplast\* |  |  |  |  |
| \*Cell Wall\* |  |  |  |  |
| Cytoskeleton (micotubules & micofilaments) |  |  |  |  |
| Centrioles |  |  |  |  |
| **Organelle** | **Function/Job** | **Structure**  (What is it made of, how is it arranged, what does it look like? | **Found in prokaryotes, eukaryotes, or both?** | **Found in animal cells, plant cells, or both?** |
| \*Cell Membrane (Plasma membrane)\* |  |  |  |  |
| Cilia |  |  |  |  |
| Flagella |  |  |  |  |
| Leukoplast |  |  |  |  |
| Vesicles |  |  |  |  |

Biology Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

HW: CHEGGER Review Period: \_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

Identify five tasks that all eukaryotic cells must perform (hint: think about CHEGGERR). Then identify the organelle that helps the cell accomplish each task. Explain why each task is important in cell functioning.

|  |  |  |
| --- | --- | --- |
| Task | Organelle(s) | Importance of task |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

Some metabolic disorders are usually characterized by fatigue and “exercise intolerance.” Hypothesize several reasons for this and refer to specific cellular structure(s) responsible.

|  |  |
| --- | --- |
| Organelle(s) | Reason |
|  |  |
|  |  |
|  |  |

Biology I Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Worksheet: Cell Parts Coloring Period: \_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

**Animal Cell Coloring**

**Directions:** Choose a color for each of the parts below and fill in the square with the color of your choice. Color the cell part to match. Fill in the blank with the correct number.

□ Cell Membrane \_\_\_\_

□ Cytoplasm \_\_\_\_

□ Cytoskeleton \_\_\_\_

□ Flagellum \_\_\_\_

□ Golgi Apparatus \_\_\_\_

□ Lysosomes \_\_\_\_

□ Mitochondria \_\_\_\_

□ Nuclear Envelope \_\_\_\_

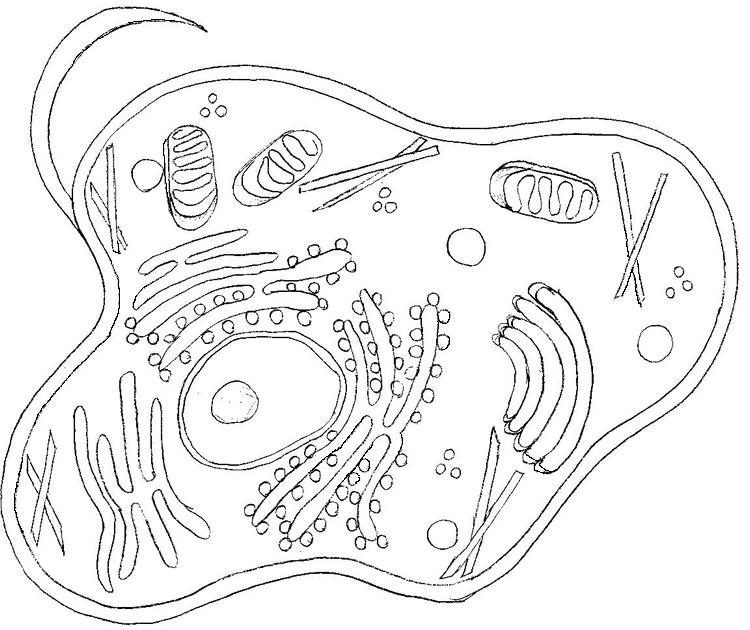
□ Nucleolus \_\_\_\_

□ Nucleus \_\_\_\_

□ Ribosomes \_\_\_\_

□ Rough Endoplasmic Reticulum \_\_\_\_

□ Smooth Endoplasmic Reticulum \_\_\_\_



**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

**10**

**11**

**12**

**13**

Biology I Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Worksheet: Cell Parts Coloring Period: \_\_\_\_ Date: \_\_\_/\_\_\_/\_\_\_

**Plant Cell Coloring**

**Directions:** Choose a color for each of the parts below and fill in the square with the color of your choice. Color the cell part to match. Fill in the blank with the correct number.

□ Cell Membrane \_\_\_\_ □ Nuclear Envelope \_\_\_\_

□ Cell Wall \_\_\_\_ □ Nucleolus \_\_\_\_

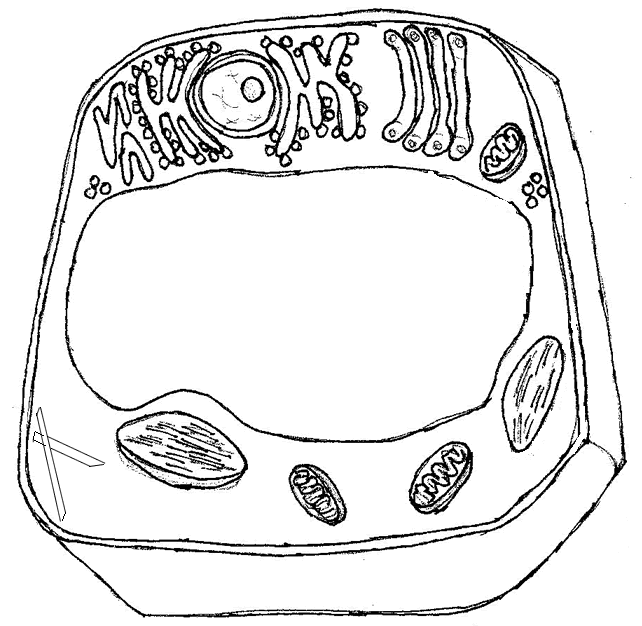
□ Chloroplasts \_\_\_\_ □ Nucleus \_\_\_\_

□ Cytoplasm \_\_\_\_ □ Ribosomes \_\_\_\_

□ Cytoskeleton \_\_\_\_ □ Rough Endoplasmic Reticulum \_\_\_\_

□ Golgi Apparatus \_\_\_\_ □ Smooth Endoplasmic Reticulum \_\_\_\_

□ Mitochondria \_\_\_\_ □ Vacuole \_\_\_\_



**1**

**2**

**3**

**4**

**5**

**6**

**7**

**8**

**9**

**10**

**11**

**12**

**13**

**14**

Objective 6

CELL STRUCTURE AND FUNCTION

The History of Cell Biology

Read the passage below, and answer the questions that follow.

The discovery of cells was made possible by the development of the microscope in the 17th century. In 1665, the English scientist Robert Hooke used a microscope to examine a thin slice of cork. Hooke described it as consisting of “a great many little boxes.” These “little boxes” reminded him of the cubicles or “cells” in which monks lived, so he called them cells.

What Hooke had observed were actually the remains of dead plant cells. The first person to observe living cells was a Dutch trader, Anton van Leeuwenhoek. Although van Leeuwenhoek’s microscope was rather simple, in 1673 it was powerful enough to enable him to view the world of microscopic organisms which had never before been seen.

About 150 years passed before scientists began to organize the observations begun by Hooke and van Leeuwenhoek into a unified theory known as the cell theory. This theory has three parts:

(1) All living things are composed of one or more cells.

(2) Cells are the basic units of structure and function in an organism.

(3) Cells come only from the reproduction of existing cells.

Read each question and write your answer in the space provided.

SKILL: Identifying Main Ideas

1. What caused scientists to discover the existence of cells?

2. What are the small rooms that monks lived in called?

3. What did Hooke observe in the cork slice?

4. What discovery is van Leeuwenhoek noted for?

5. What are the three parts of the cell theory?

Read the passage below, and answer the questions that follow.

Early evidence for the cell theory was provided by German scientists. In 1838, the botanist Matthias Schleiden concluded that all plants are composed of cells. A year later, the zoologist Theodor Schwann came to the same conclusion about animals. In 1855, Rudolf Virchow, a physician who had been studying how disease affects living things, reasoned that cells come only from other cells. Over the years, modern scientists have gathered much additional evidence that strongly supports the cell theory.

Use the two passages to complete the table below.

SKILL: Organizing Information

6. The figure below indicates events that lead up to the cell theory. Complete the table by filling in the blank spaces.

|  |  |  |
| --- | --- | --- |
| Date | Scientist | Discovery |
| 1665 | a. | observed the remains of dead plant cells |
| b. | Anton van Leeuwenhoek | c. |
| 1838 | Matthias Schleiden | d. |
| e. | f. | stated that all animals are made of cells |
| 1855 | g. | h. |

Circle the letter of the phrase that best completes the sentence.

7. The cell theory was

a. first identified in 1665.

b. the end result of many scientific investigations.

c. described by Rudolf Virchow.

d. Both (a) and (b)